PROJECT TITLE: *Movements, distribution and habitat selection of elk in the Missouri River Breaks and portions of the Charles M. Russell National Wildlife Refuge.*

FY12

PROJECT DESCRIPTION

Spatially depict elk habitat use and intensity for a better understanding of elk ecology and especially to help develop a predictive model of expected habitat quality and sentinel plant status in accordance with the Comprehensive Conservation Plan for CMR.

OBJECTIVES AND ALTERNATIVES

1. Elk distribution, movement and habitat selection during the hunting season and assessing the influence of public hunting access is the primary objective of the FWP study. Secondarily, FWP will validate the utility of late-summer and fall elk distribution models developed in southwestern Montana (Proffitt et al. in revision).

2. In addition to Objective 1, FWP's primary focus, this proposal seeks for USFWS/CMR to develop seasonal habitat selection models and resource selection functions (Manly et al., 2002) for elk habitat use during the non-hunting periods from February, 2013 through December 2014.

3. Incorporate data resulting from this study of elk with objective no. 3 of the **on-going** CMR I&M project on grazing;

Using the updated map layers and complete livestock grazing history, coupled with native ungulate population monitoring, we will spatially depict historic and current herbivory intensity and develop a predictive model of expected habitat quality and sentinel plant status

METHODS AND PROTOCOLS

Up to 25 adult female elk in the Larb Hills and adjacent breaks habitat in HD 622/631 and 25 adult female elk in the breaks habitat in HD 621 will be captured and outfitted with GPS collars in February, 2013 to obtain 2 years of fine-scale spatial data on seasonal distributions, movements and habitat use. Locations will be recorded every 2 hours and should yield nearly 8,000 locations per individual and total nearly 400,000 for the population.

DATA ANALYSIS / MODELS

Utilization distributions (UDs) describe an animal's use of space via a probability density and can be constructed from individual locations gathered over time (van Winkle 1975, Worton 1989). UDs can be used to quantify and relate an animal's relative space use to resource attributes by providing a continuous measure of animal density throughout the study area where the probability and intensity of use can be derived at any given location (Marzluff et al. 2004, Millspaugh et al. 2006). We will used Home Range Tools for ArcGIS (Rodgers et al. 2007) to generate pre-breeding fixed kernel density UDs and delineate 95% isopleths for home ranges (Demers et al. 2010).

DATA MANAGEMENT

FWS protocol will be followed regarding data management. Data collected during this study will be freely shared among agency collaborators. Data will be housed in databases and a GIS located on CMR computers in Lewistown and with FWP.

PARTNERS

Five people have been involved in the project, representing 2 agencies/organizations and 0 Landscape Conservation Cooperatives.

SOURCES OF SUPPORT

FWS I&M = $50,000

CMR = $20,000

FWP = $89,000

BLM = $30,000 - pending

CURRENT STATUS

FWS funds were used to order 38 Lotek GPS collars and FWP funds were used to order 12 more for a total of 50. Deployment is scheduled for February, 2013.

CHALLENGES

None.

MORE INFORMATION

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